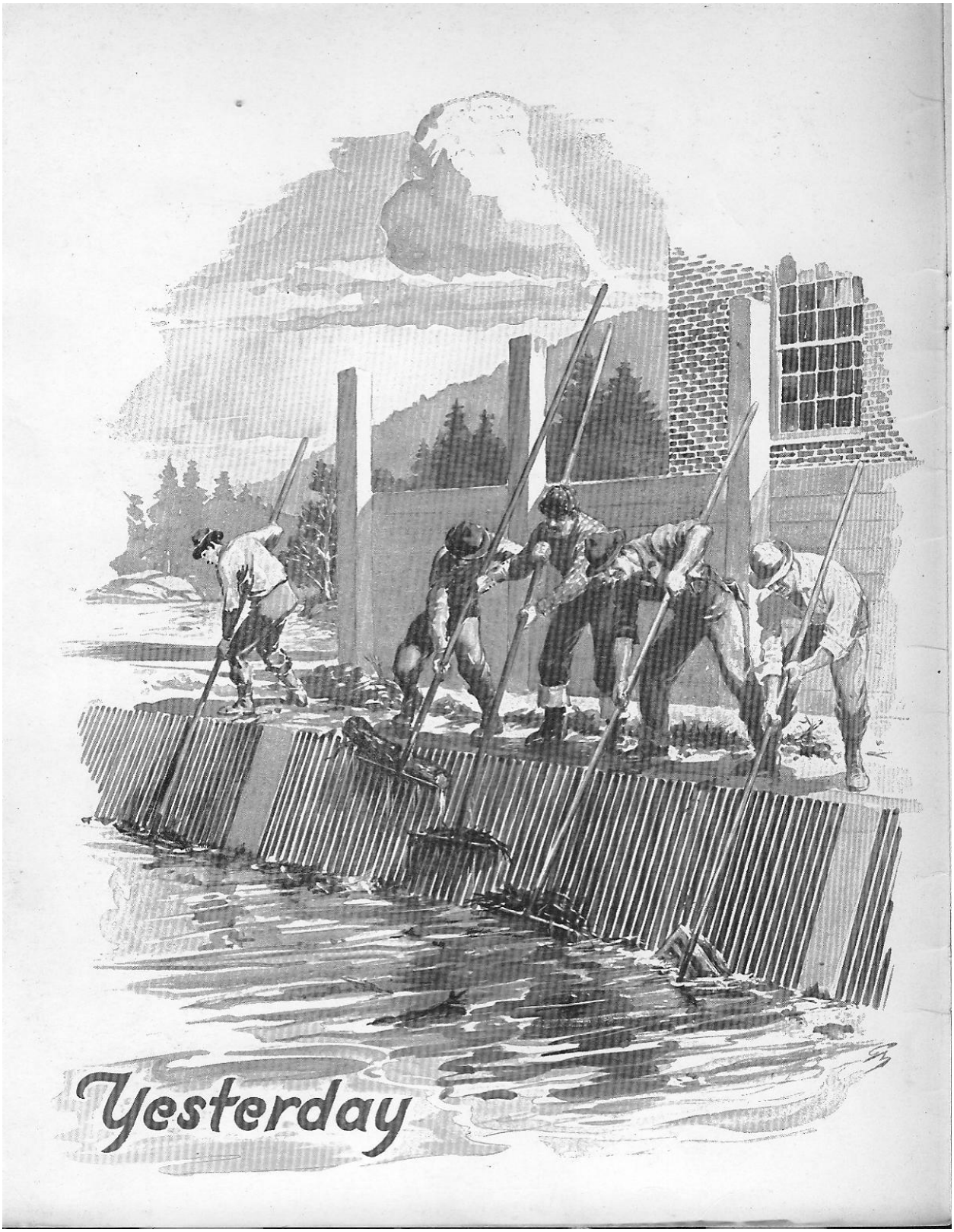
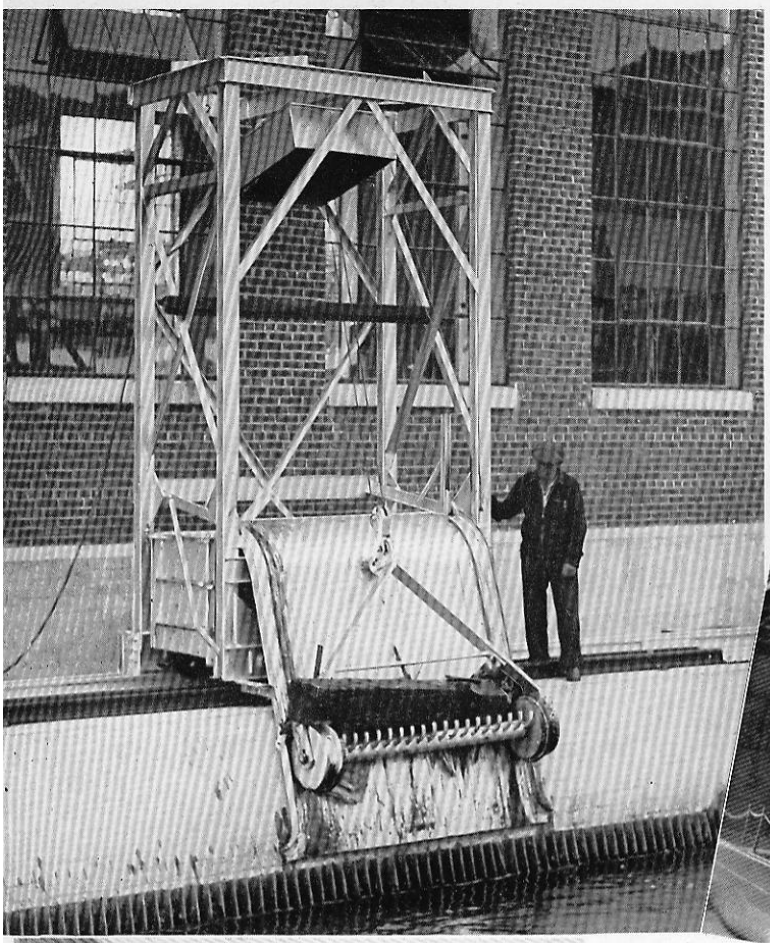
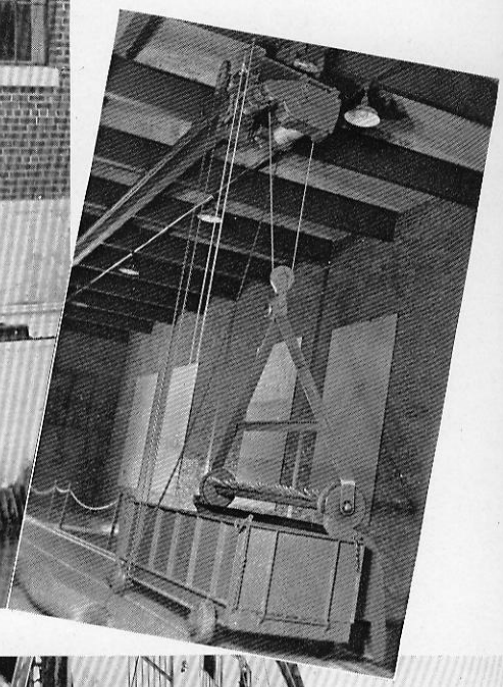
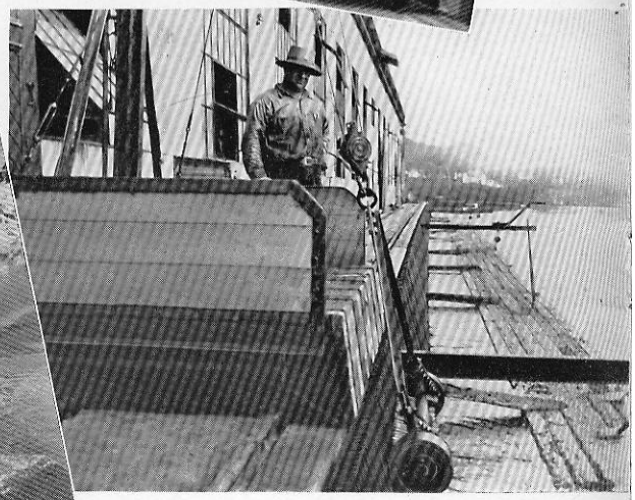
LEONARD TRASH RACK RAKE BY SMITH


Yesterday

Save LOSSES







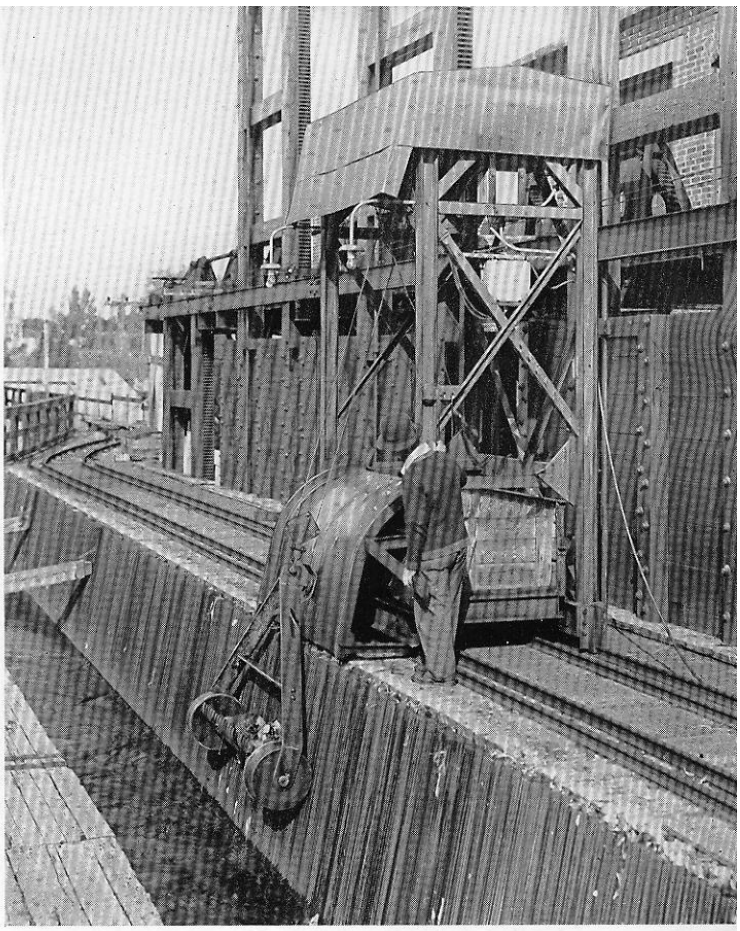
The LEONARD *Trash Rack* RAKE ✓✓

ANSWERING the urgent need for efficiency in every operation, the improved Leonard Trash Rack Rake fills a vital place in public utility and other water power plants, and pumping stations, where leaves, branches and miscellaneous debris are characteristic of the stream. For it helps to eliminate loss of power by reducing head losses through the rack by keeping intakes clear. This condition and service are illustrated on the facing page and at the right.

Extremely simple in design, and yet it will stand up and give positive action. Racks that otherwise would be clogged with debris are kept free and clear with this modern and efficient device.

Today

Save MAN POWER



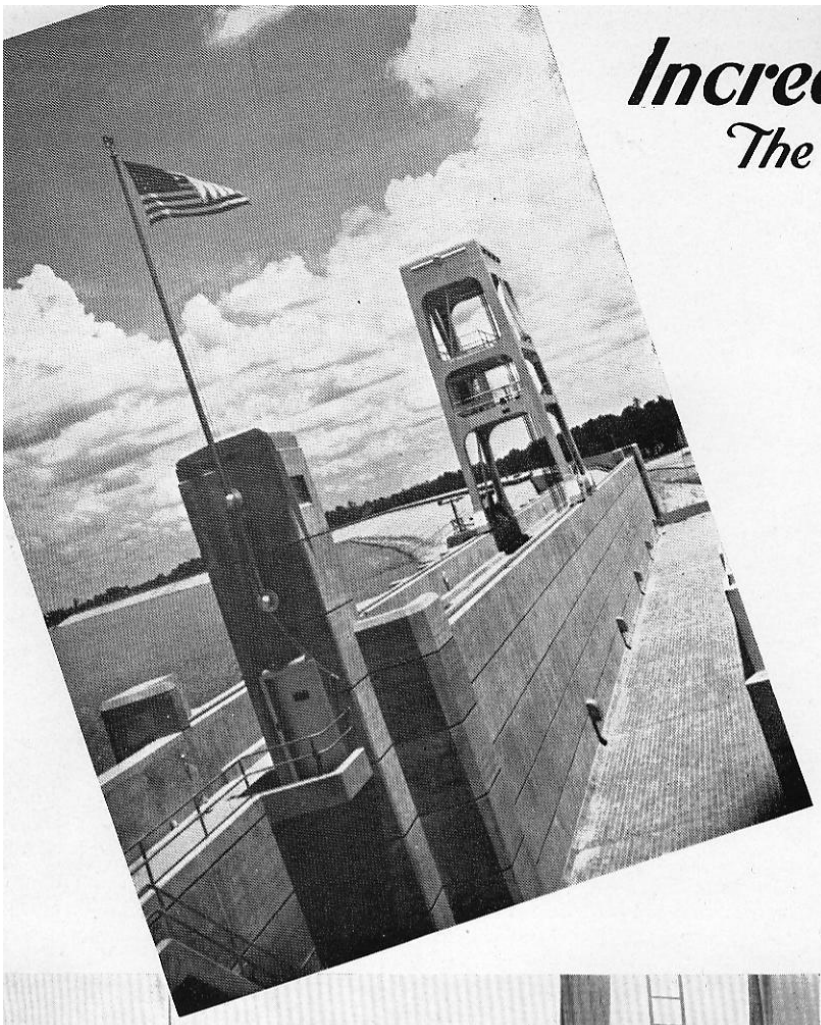
Cut Costs with the

LEONARD Trash Rack RAKE

CUT losses through the rack, which consume power and reduce production! The Leonard Trash Rack Rake will enable you to do this and more! For it may be operated by a single unskilled attendant, thus enabling you to reduce labor costs.

As will be noted in the pictures, this accessory to water power plants consists of a series of teeth mounted in a tubular axle with wide-face flanged wheels on each end. The rake wheels contain spring set plugs which bear against the axle and rotate the teeth upward, when the rake descends and downward for cleaning operations. In other words, the teeth are turned upward and are almost parallel with the rack bars to ride over any obstruction when the rake is lowered, and turned downward automatically to a position about right angles to the bars, thus penetrating the rack when being raised *to rake it clear of foreign matter.*

The design permits installation for use on most existing racks without alterations. It is operated by a motor driven hoist.



Increase POWER a

The Leonard Trash Ra

We have the testimony of users over a lo
Santee-Cooper and installatio

SOUTH CAROLINA P
SANTI
HYDRO-ELECTRIC
124
COLUMBIA
BRANCH OFFICE

S. Morgan Smith Company
York, Pennsylvania

Gentlemen:

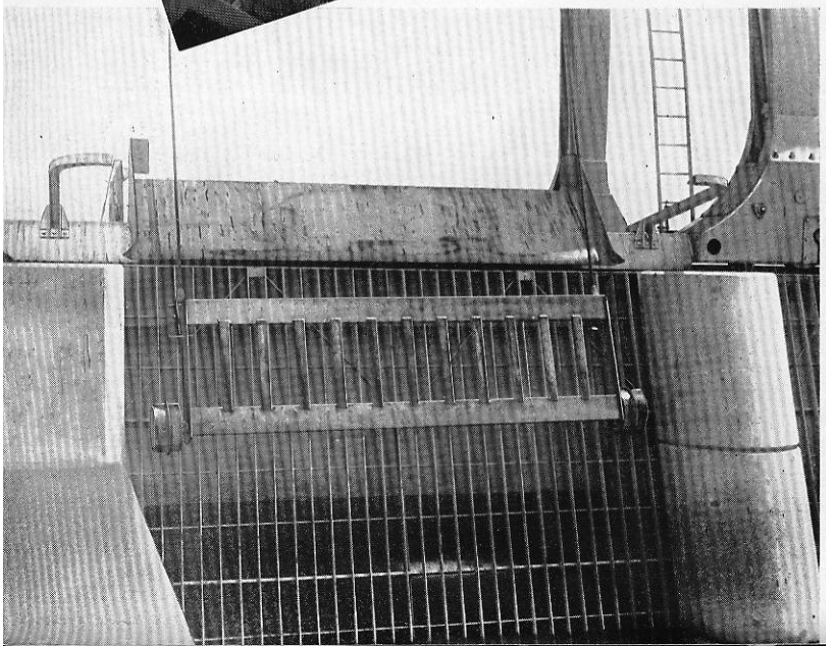
In assembling factual da
had occassion to discuss with
with your "Leonard Trash Rack
that I thought you would like
Santee-Cooper to your list of

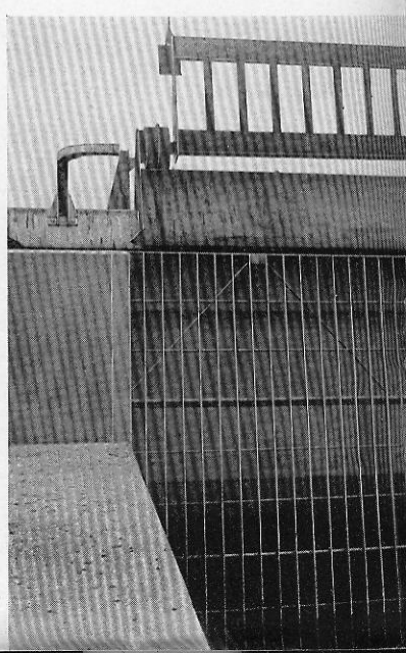
We expected floatage to
round the clock generation bu
your "Leonard" raked away the
a constant and uninterrupted

It certainly has earned
good-will for having perfected
hydro-electric operation.

JAZ:md

A list of representative users





and "KW" Production
ack Rake Assures Both

long period of years, of which this letter from
ion views of their plant are typical

PUBLIC SERVICE AUTHORITY
TEE-COOPER
IC AND NAVIGATION SYSTEM
5 MAIN STREET
, SOUTH CAROLINA

May 9, 1944

data for our 1943-44 annual report, I have
th our operating engineers their experience
ck Rake" and their report is so favorable
ke to know it in order that you might add
of "satisfied customers."

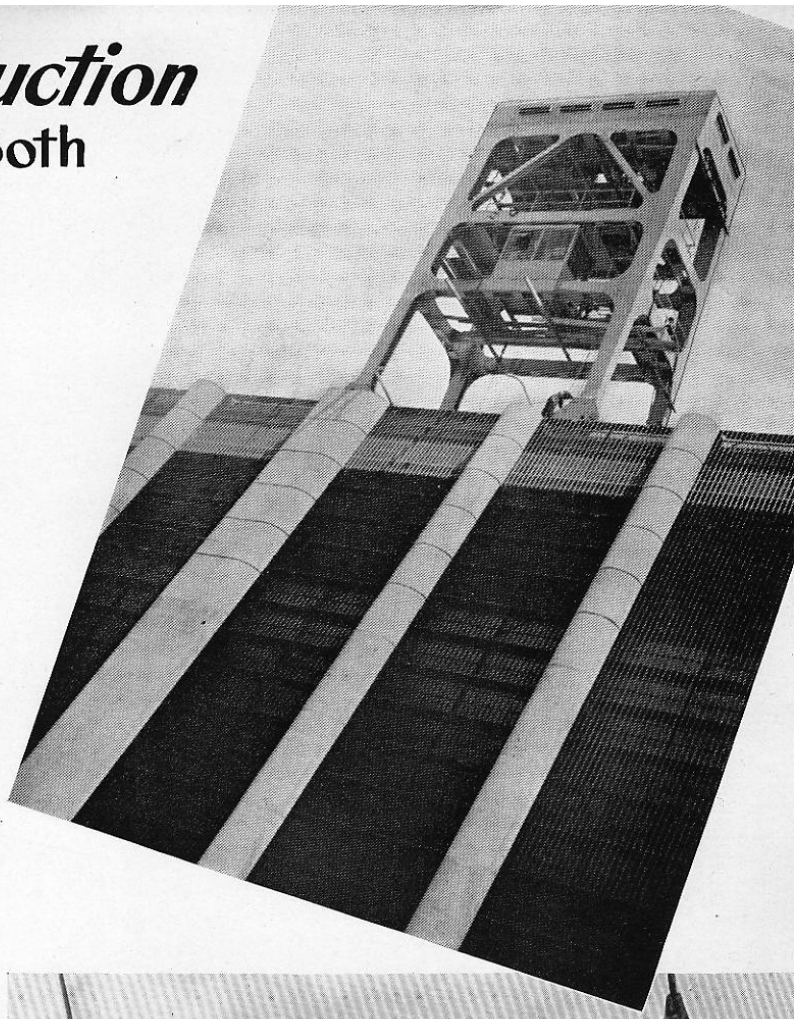
o be a major problem in our first year of
but thanks to the ease and speed with which
he heavy accumulations of trash we have had
flow of power producing waters.

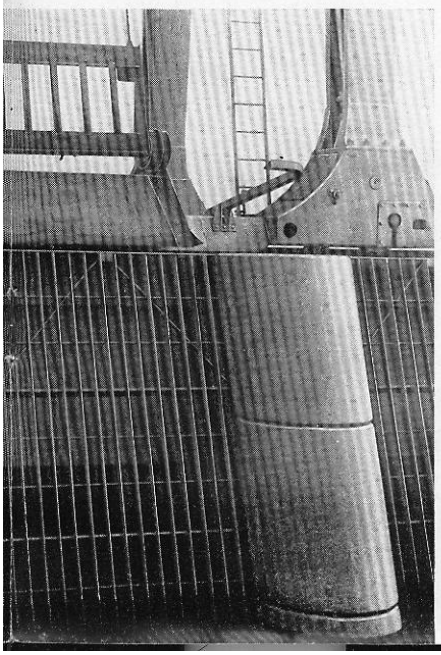
l its way and you have earned our everlasting
ed as necessary a complement to successful

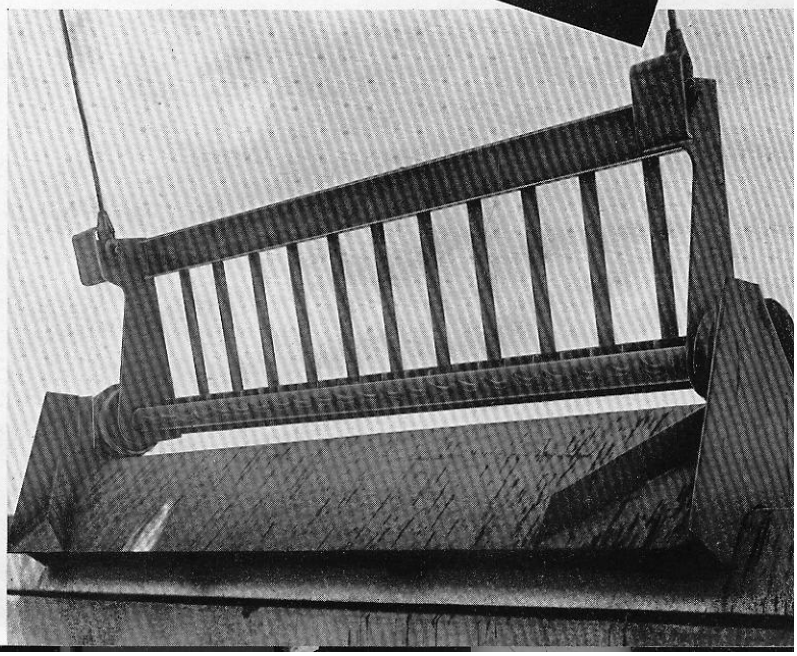
Cordially yours,

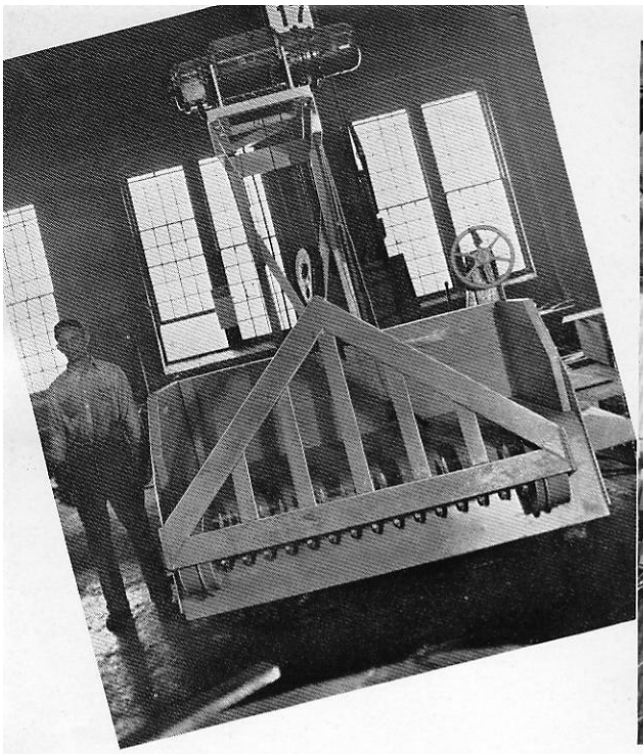
John A. Zeigler, Chief
Information and Safety

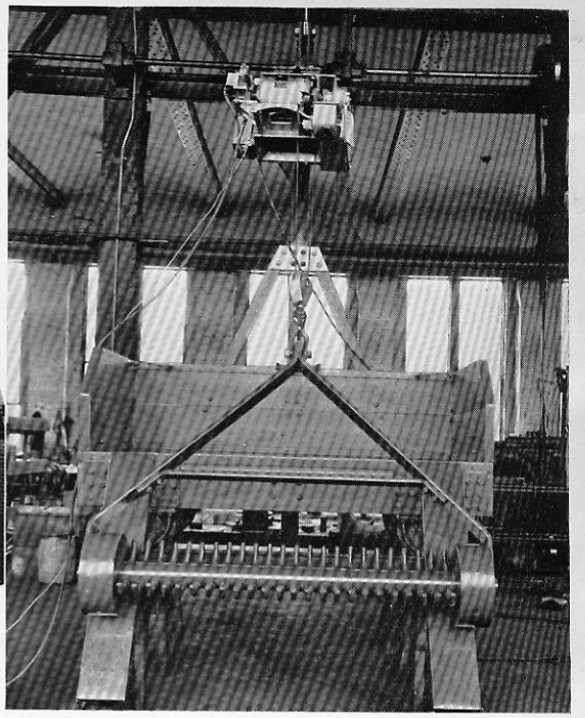
s appears on inside of back cover

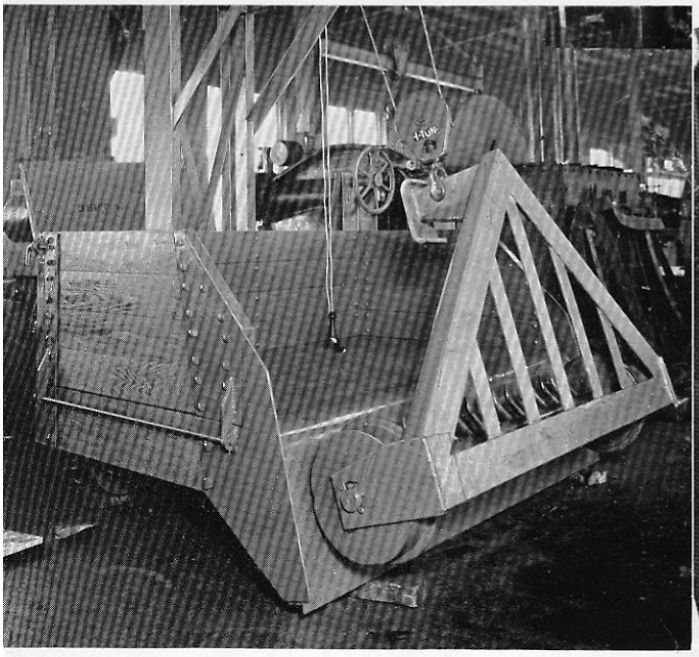


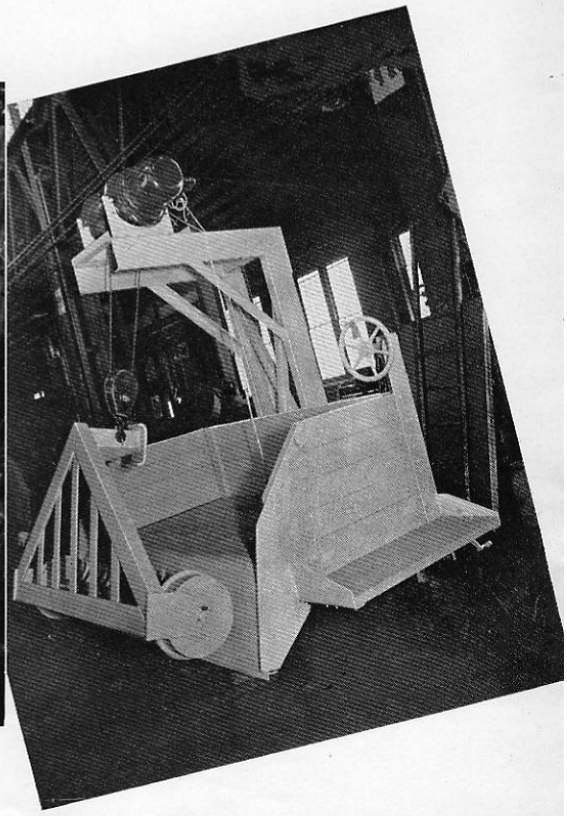










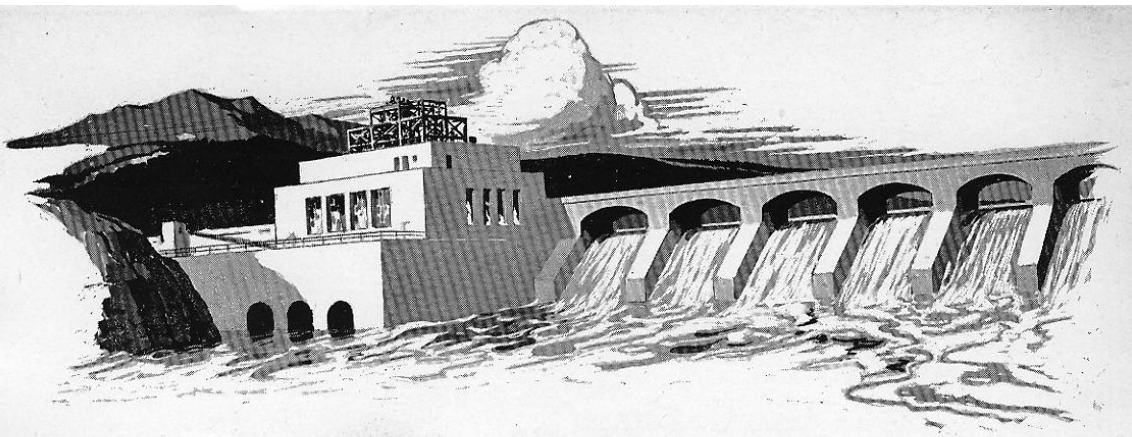


In the SHOP

BUILDING Leonard Trash Rack Rakes is in strict accordance with our usual careful Shop Methods employed in the production of hydraulic turbines, valves, pumps, hoists, gates and other hydraulic equipment. From the research, engineering and designing stages to final production, there is no deviation from our standard practice. The same painstaking care is used in our smallest product as is exercised in the engineering and fabrication of a one hundred thousand horsepower Smith turbine.

High quality is assured by this policy, in which fabrication in modern shops with the latest machine tool equipment is a factor, and by employing skilled artisans!

Our nearly 70 years of hydraulic experience is a reservoir of information that enables us to assist in the solution of unusual and difficult problems.



Specifications

THE Leonard Trash Rack Rake is simple in construction and operation. The rake consists of a series of teeth, spaced to suit the racks, welded into a tubular axle with wide-face flanged wheels mounted on each end to guide the rake. The wheels contain spring set plugs which bear against the axle and automatically tilt the teeth upward parallel with the rack bars when descending, and rotate them to a position approximately at right angles to the rack bars when ascending. The teeth extend approximately three-quarters of an inch into the space between the rack bars when in the ascending position.

In operation, the rake rolls down on the face of the trash rack, with the teeth turned up parallel with the rack, thus overriding any obstacle. At the moment of pull-up, they rotate, penetrating into the rack and rake it clean on the upward movement, carrying the trash up to a position on the apron of the trash car or hopper for manual unloading. Several different arrangements of the rake, trash car or hopper have been developed for adaptation to existing plant layouts.

The rake is of simple, rugged construction, efficient and easily operated by an unskilled laborer. It can be actuated by any standard hoist powered by an electric or air motor, or by a gasoline engine. There is nothing to get out of order or to demand expert attendance. Many years of operating experience have proven that maintenance and repair costs are extremely low. Although the rake can be obtained without hoist, trash car or apron, most installations are purchased with these items, thus benefiting from our experience.

The two types of rake assembly most generally used for average size plants are shown on the attached blue-print data sheets P-5851-F-4 and P-5851-H-4.

The first of these is built as a complete unit including the rake, apron, trash car and hoist. It is operated by a cable type, base mounted, hoisting unit, powered with a totally enclosed, outdoor type, electric motor suitable for continuous duty and of ample capacity for the service required. A pendant control is included therewith. The hoist and motor are mounted on a boom support integral with the trash car which is fitted with a hand crank-operated sprocket and chain device for propulsion along the trackway.

The second of the two designs of rakes referred to above has a geared trolley type hinged drum hoist mounted on a monorail made from a standard "I" beam. It also is powered by a totally enclosed, outdoor type, electric motor with pendant control.

In both designs, the trash cars and aprons are designed to fit the rakes. The aprons on the front of the cars are sloped to conform with the sloping of the rack bars. The cars are made of fabricated steel or of selected hard wood, reinforced with bar iron and end striking plates to protect them from damage. Their ends nearest the spillway are hinged.

For plants which have a large amount of rack surface, we recommend one of the other three types shown on the blue-print data sheets P-5851-I-4, P-5851-J-4 and P-5851-K-4. Installations similar to those shown on these sheets are in operation and all are giving very satisfactory service.

We invite your inquiries and will be pleased to submit, upon request, our recommendations with detailed specifications and prices.

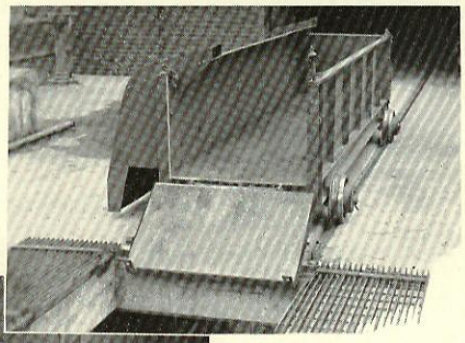
DATA Sheets

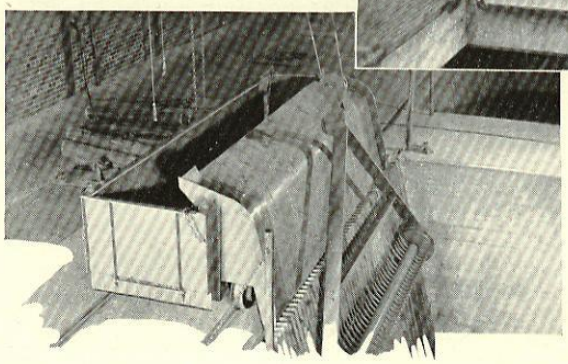
ONE difficulty in achieving 100% service is keeping the racks free of debris. These racks are screens of flat steel bars spaced from 1 to 4 or more inches apart, located in front of the intake through which the water passes to the turbine. The racks keep trash out which might damage the turbine blades, such as branches, debris, or floating ice. It will be seen that the Leonard Trash Rack Rake is, consequently, a vital part of the equipment of a water power plant or hydro-electric station. Detailed information is required by us in order that we may serve users efficiently and promptly. The sheets which follow are supplied showing various types of installations. It is requested that they be examined and the sheet pertinent to your individual requirements be filled in, removed from the Bulletin and returned to us for detailed specifications and quotation.

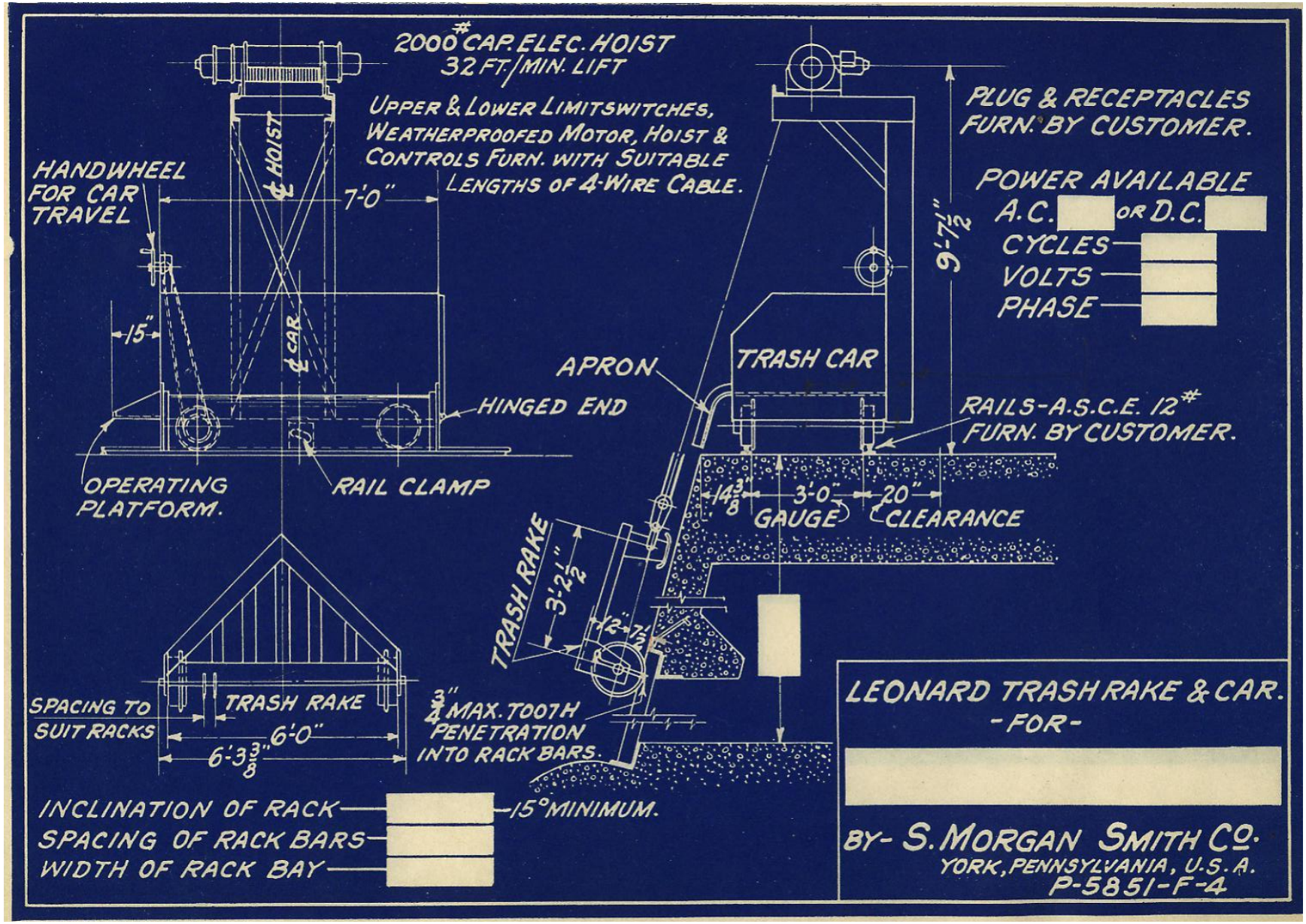
S. MORGAN SMITH COMPANY

YORK, PENNA.

BETTER IN THE TRASH CAR
THAN CLOGGING THE RACKS






2000# CAP. ELEC. HOIST
32 FT./MIN. LIFT
UPPER & LOWER LIMITSWITCHES, WEATHERPROOFED MOTOR, HOIST & CONTROLS FURN. WITH SUITABLE LENGTHS OF 4-WIRE CABLE.
HANDWHEEL FOR CAR TRAVEL
℄ HOIST
7'-0"
15"
℄ CAR
HINGED END
APRON
OPERATING PLATFORM.
RAIL CLAMP
TRASH CAR
PLUG & RECEPTACLES FURN. BY CUSTOMER.
POWER AVAILABLE
A.C. OR D.C.
CYCLES
VOLTS
PHASE
9'-7½"
RAILS-A.S.C.E. 12# FURN. BY CUSTOMER.
14⅜"
3'-0" GAUGE
20" CLEARANCE
TRASH RAKE
3'-2½"
7½"
SPACING TO SUIT RACKS
TRASH RAKE
6'-0"
6'-3⅜"
¾" MAX. TOOTH PENETRATION INTO RACK BARS.
INCLINATION OF RACK
SPACING OF RACK BARS
WIDTH OF RACK BAY
15° MINIMUM.
LEONARD TRASH RAKE & CAR.
-FOR-
BY- S. MORGAN SMITH CO.
YORK, PENNSYLVANIA, U.S.A.
P-5851-F-4

Leonard Trash Rake Installations

PURCHASER	ADDRESS	PLANT
Rochester Gas & Electric Corp.	89 East Avenue, Rochester, N. Y.	Station No. 5
Ebasco Services Inc. for Idaho Power Company	2 Rector Street, New York, N. Y.	Upper Salmon H.E. Dev. *(Two installations)*
Public Service Company of New Hampshire	Manchester, N. H.	Eastman Falls
Concord Electric Company	Concord, N. H.	
Jackson Mills	Wellford, S. C.	High Shoals Plant No. 3
Bangor Hydro-Electric Company	Bangor, Maine	Veazie Station Stillwater Plant
Lake Superior District Power Co.	Ashland, Wisconsin	Ashland Plant
Penobscot Chemical Fibre Company	Boston, Mass.	Great Works, Maine *(Two installations)*
Rumford Falls Power Company	Rumford, Maine	
Wisconsin Public Service Corp. (Public Utility Engr. & Service Corp.)	Chicago, Illinois	Grandfather Falls
Great Northern Paper Company	Mattawamkeag, Maine	Mattaceunk Development
New York Power & Light Corp.	Albany, New York	Mechanicville Plant
Central Nebraska Public Power & Irrigation District	Hastings, Neb.	Johnson No. 1 Plant
Consolidated Water Power & Paper Co.	Wisconsin Rapids, Wisconsin	Knowlton Development
South Carolina Public Service Authority	Charleston, S. C.	Santee Cooper Dam
Central Maine Power Company	Augusta, Maine	Solon Development
Virginia Electric & Power Co.	Richmond, Va.	C. & O. Canal Plant
Greenwood County	Greenwood, S. C.	Buzzard's Roost Plant
Westfield River Paper Co.	Russell, Mass.	
Southern Berkshire Power & Electric Company	Great Barrington, Mass.	
Cumberland County Power & Light Co.	Saco, Maine	Cataract Station

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